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PATENT
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of:)
)
Giuseppe COLOMBO et al.) Group Art Unit: 1762
)
Application No.: 09/892,480) Examiner: Elena Tsoy
)
Filed: June 28, 2001)
)
For: METHOD AND APPARATUS FOR)
INTRODUCING IN CONTINUOUS A)
SUBSTANCE IN LIQUID PHASE)
INTO PLASTICS GRANULES)

Mail Stop Appeal Brief--Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

In support of the Notice of Appeal filed December 17, 2003, Appellants present this Appeal Brief in triplicate complying with 37 C.F.R. § 1.192 and enclose a check for \$330.00 covering the fee under 37 C.F.R. § 1.17(c). This Appeal Brief is timely, because it is filed within two months of the Notice of Appeal.

This appeal responds to the August 18, 2003, final rejection of claims 34-38, 40-42, 47, and 48.

If any additional fees are required or if the enclosed payment is insufficient, Appellants request that the required fees be charged to Deposit Account No. 06-0916.

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I. Real Party In Interest

Pirelli Cavi E Sistemi S.p.A. is the assignee of record for the entire right, title, and interest in the application.

II. Related Appeals and Interferences

There are currently no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status Of Claims

Claims 34-66 are pending in this application; however, claims 49-66 have been withdrawn from consideration by the Office in view of the January 29, 2002, Restriction Requirement. The Office has indicated that claims 39 and 43-46 would be allowable if rewritten in independent form including all the limitations of the base and intervening claims

Claims 34-38, 40-42, 47, and 48 have been finally rejected by the Examiner and Appellants appeal the rejection of those claims. The attached Appendix contains a clean copy of the claims involved in the appeal, *i.e.*, claims 34-38, 40-42, 47, and 48.

IV. Status Of Amendments

All amendments have been entered. No amendments under 37 C.F.R. § 1.116 have been filed.

V. Summary Of Invention

During the processing of plastic, it has been common practice to incorporate therein suitable substances in liquid phase so as to provide the finished product with desired properties. Specification at page 1, lines 13-19. Appellants have identified the need to develop insulating materials with given levels of homogeneity and isotropy. To achieve this end and similar ends, Appellants discovered a method and an apparatus for the continuous introduction of a substance in liquid phase into plastic granules. Specifically, the method comprises:

a) feeding a substantially continuous flow of plastics granules to at least one substantially static spraying chamber;

b) spraying a substance in liquid phase onto the plastics granules, which are continuously flowing within the at least one spraying chamber;

c) passing the granules, which are partially or totally coated by the substance in liquid phase and are continuously leaving the spraying chamber, through a substantially static mixing means supported in at least one mixing chamber. The at least one mixing chamber is located downstream of the spraying chamber. The substantially static mixing means reduces the abrasive action on the granules to a minimum while the partially or totally coated granules are mixed; and

d) submitting the resultant mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules. Specification at page 5, lines 4-22.

“Substantially static mixing means” has been defined to mean a mixing device without moving mechanical elements that can generate substantial amounts of plastic dust from the plastic granules. Specification at 5, lines 23-27. This way the granules are coated without introducing additional energy that may generate abrasive action. *Id* at page 5, line 27 through page 6, line 4.

The claimed process was discovered to be capable of resolving one or more problems in the prior art: protecting the physical integrity of the plastic granules (in particular the avoidance of generating plastic dust), allowing operation with thermally unstable or poorly heat-resistant plastic granules, and/or allowing operation with thermally unstable or poorly heat-resistant substances in liquid phase. Compare specification at page 4, line 30 to page 5, line 3 *with id.* at page 3, line 3 to page 4, line 28.

Pending claims 34-48 relate to a method for the continuous introduction of a substance in liquid phase into plastic granules. Claims 49-66 relate to an apparatus for the continuous introduction of a substance in liquid phase into plastic granules.

VI. Issues

The sole issue on appeal is whether claims 34-38, 40-42, 47, and 48 are patentable under 35 U.S.C. § 103(a) over *Tate* (U.S. Patent No. 4,035,322) in view of *Nishida* (U.S. Patent No. 6,186,658) and further in view of *Hiorth* (U.S. Patent No. 4,191,480).

VII. Grouping Of Claims

Each claim of this patent application is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C. § 282. For convenience in handling this Appeal, however, pending claims 34-38, 40-42, 47, and 48, stand or fall together.

VIII. Argument

A. The Rejection of Claims 34-38, 40-42, 47, and 48 Under 35 U.S.C. § 103(a) over *Tate* in view of *Nishida* and further in view of *Hiorth* Should be Reversed Because *Nishida* is Nonanalogous Art.

The only pending rejection of the claims is an obviousness rejection based in part on the teachings of *Nishida*. In order to rely upon a reference under Section 103, the reference must be analogous prior art. M.P.E.P. § 2141.01(a). In determining whether a reference is analogous prior art, the Federal Circuit has espoused a two prong test inquiring:

(1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

In re Clay, 966 F.2d 656, 658-59, 23 U.S.P.Q.2d 1058, 1060-61 (Fed. Cir. 1992)

As discussed above, Appellants' rejected claims are directed to a method for the continuous introduction of a substance in liquid phase into plastic granules. This method comprises, *inter alia*, spraying plastic granules with a substance in liquid

form, mixing the sprayed granules, and then drying the resultant product to allow a substantially complete absorption of the substance in liquid phase by the granules.

Nishida is from a separate field of endeavor -- catalytic cracking processes. In stark contrast to the claims at issue, *Nishida* is drawn to "an apparatus for mixing a fluid feed stock, such as a heavy oil, and particles of a catalyst for **gasifying** the heavy oil." See Abstract and col. 1, lines 7-9 (emphasis added). In such catalytic cracking processes, the heat from the catalyst **vaporizes** the feed stock and brings it up to the desired reaction temperature. See e.g., col. 4, lines 1-2; col. 12, lines 8-14 (emphasis added). "[A] rapid mixture of feed stock and a catalyst and vaporization thereof... is indispensable." See col. 1, lines 39-42. *Nishida* repeatedly teaches that the catalyst particles are heated to a temperature of 450-700 °C. See e.g., col. 4, line 32; col. 6, lines 6 and 7; col. 7, lines 1 and 24; col. 12, line 7; Experiment 1 at col. 13, line 12; and Experiment 3 at col. 15, line 37.

In other words, the process of *Nishida* is not directed to a method for coating a plastic particle such that the coating material is absorbed into the particle or any subpart of that method. *Nishida* describes a process that would likely destroy the particles and/or substance in liquid phase recited by the claims. Therefore, a person of ordinary skill in the art would never consider *Nishida* to be reasonably pertinent to the claimed process.

For this reason alone, the rejection of claims 34-38, 40-42, 47, and 48 should be reversed and the claims allowed.

B. The Rejection of Claims 34-38, 40-42, 47, and 48 Under 35 U.S.C. § 103(a) over *Tate* in view of *Nishida* and further in view of *Hiorth* Should be Reversed Because the Examiner has Failed to Establish a Case of *Prima Facie* Obviousness.

The Examiner rejects 34-38, 40-42, 47, and 48 as unpatentable under 35 U.S.C. § 103(a) over *Tate* in view of *Nishida* and further in view of *Hiorth*.

Appellants respectfully submit that this rejection is improper because the Examiner has not provided the necessary evidence to establish a case of *prima facie* obviousness. Neither *Tate*, *Nishida*, nor *Hiorth*, alone or in combination, renders obvious the recited method.

1. The Rejection Should be Reversed Because the Examiner has Not Set Forth The Three Basic Criteria for a *Prima Facie* Case of Obviousness.

The Federal Circuit has noted “the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992). If the Examiner fails to proffer “a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent.” *Id.* Using principles of obviousness discerned from case law, the Office sets forth the requirements for a *prima facie* case of obviousness:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior

art reference (or references when combined) must teach
or suggest all the claim limitations.

M.P.E.P. § 2142 (emphasis added).

To meet this burden, the Examiner must cite facts in support of each requirement for a Section 103 rejection and not merely recite the Examiner's opinion. The Federal Circuit has explained that "[w]ith respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or expertise . . . Rather, the Board must point to some concrete evidence in the record in support of these findings." *In re Zurko*, 258 F.3d 1379, 1385, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001) (emphasis added).

In this case, the Examiner fails to present substantial evidence on all three prongs. First, there is no evidence, except Appellants' specification, of a suggestion or motivation that would prompt a person of ordinary skill in the art to combine *Tate*, *Nishida*, and *Hiorth*. Second, there is no evidence of a reasonable expectation of success that would prompt a person of ordinary skill in the art to combine *Tate*, *Nishida*, and *Hiorth*. Third, neither the proposed combination of *Tate*, *Nishida*, and *Hiorth*, nor the "evidence" of the knowledge of one skilled in the art teaches or suggests all of the claim limitations.

**2. The Rejection Should be Reversed Because
Neither the Prior Art nor the Knowledge Generally
Available to One of Ordinary Skill in the Art
Provides the Requisite Suggestion or Motivation to
Combine *Tate*, *Nishida*, and *Hiorth*.**

The Federal Circuit has recognized that “the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999), *abrogated on other grounds by In re Gartside*, 203 F.3d 1305, 53 U.S.P.Q.2d 1769 (Fed. Cir. 2000).

The Court has further noted that the Examiner’s burden to establish a motivation to combine or modify may be satisfied by one of only three sources. First and most importantly, an objective teaching to combine the references may be found in the prior art. Second, the nature of the problem may provide the suggestion to combine the references. And third, general knowledge of one of ordinary skill in the art may supply the motivation to the combine the prior art references. *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617; *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598-99 (Fed. Cir. 1998); *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987); *In re Rouffet*, 149 F.3d 1350, 1355, 47 U.S.P.Q.2d 1453, 1456 (Fed. Cir. 1998). Irrespective of the source, however, the Examiner’s factual findings regarding the motivation to combine or modify must be “clear and particular.” *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617. The Examiner fails to set forth such “clear and particular” evidence here.

a. **The Examiner's Failure to Present Evidence of Motivation Dictates Dismissal of the Examiner's Rejection and Allowance of Claims 34-38, 40-42, 47, and 48.**

The Examiner admits that *Tate* fails to teach introducing a substance in liquid phase into plastic granules using a method comprising, *inter alia*, (1) step a) of independent claim 34, (2) step b) of independent claim 34, and (3) step c) of independent claim 34. See April 25, 2003 Office Action at page 3. The Examiner relies on *Nishida* to cure these deficiencies. *Id.* However, the Examiner has failed to make a factual inquiry based on the objective evidence of record. Such an inquiry reveals that there is no motivation to make the proposed modifications at the time the invention was made, and in fact, that the cited references teach away from the proposed combination for at least the following reasons.

First, *Tate*'s method is drawn to **preparing curable pellets** of polyethylene and copolymers thereof (see *Tate* at abstract), whereas *Nishida* is drawn to **catalytic cracking of liquid feed stock at high temperatures** to produce gasoline or light olefins. See *Nishida* at abstract. Second, *Tate*'s method involves coating **pellets of polyethylene** and/or copolymers with a liquid curing agent, whereas, in *Nishida*'s method, the heat from the **silica alumina catalyst** vaporizes the feed stock (see *e.g.*, *Nishida* at col. 4, lines 1-2; col. 12, lines 8-14) and the oil vapors thus produced are later **separated from the catalyst** and the catalyst is recycled for further use (see *e.g.*, *id.* at col. 7, lines 31-35). Third, in *Tate*'s method, the liquid curing agents **penetrate and diffuse into the pellets**, whereas *Nishida* discloses

that “the contact reaction [with the **silica alumina catalyst**] can be conducted uniformly for **an extremely short period of time**... (approximately 0.1 to 1.5 seconds).” See *id.* at col. 7, lines 49-55.

As *Tate* and *Nishida* involve the use of **different chemicals in different methods for different purposes** to obtain **different products**, one of ordinary skill in the art would not have been motivated to combine their teachings as proposed by the Examiner. Accordingly, for at least this reason, Appellants submit that the Examiner has failed to demonstrate a *prima facie* case of obviousness.

In response, the Examiner argues without analysis that “there is motivation to combine *Tate* et al. and *Nishida* et al. since in contrast to *Tate* et al., a process of *Nishida* et al. provides rapid and uniform mixing [of] particles of the same size with a liquid coating.” See page 3 of the Aug. 18, 2003 Office Action (emphasis in original). This statement, however, indicates that the Examiner, while acknowledging at least one of the critical differences between the processes disclosed in *Tate* and *Nishida*, has failed to appreciate the effect such a difference would have on *Tate*, as viewed by one of ordinary skill in the art.

Nishida provides “an apparatus for mixing a fluid of a feed stock, such as a heavy oil, and particles of a catalyst for gasifying the fluid in a reactor.” See e.g., col. 1, lines 61-63. Regarding *Nishida*’s rapid and uniform mixing, *i.e.*, the Examiner’s sole asserted source of motivation for the proposed modification, *Nishida* teaches that “the feed stock can be mixed rapidly and uniformly with the particles **because the feed stock is further refined by impact upon contact with the**

annularly flowing particles.” See col. 7, lines 40-43 (emphasis added). In *Nishida*, the feed stock is formed into oil vapors (*i.e.*, not absorbed) and later separated from the catalyst, which is recycled for further use. See *e.g.*, col. 7, lines 31-35.

This process of *Nishida* stands in stark contrast to *Tate*. See *e.g.*, col. 3, lines 47-49 (reciting that “the curing agent penetrates and diffuses into the pellets”).

Nishida is **not** concerned with penetration and diffusion of a liquid into the particles. In fact, as discussed above, *Nishida*’s method is tailored to achieve exactly the opposite and, for at least this reason, *Nishida*’s teaching of “rapid and uniform mixing” cannot be a motivation to modify *Tate*; rather it is a motivation NOT to make the modifications proposed by the Examiner.

In addition, the Examiner asserts that “the substitution of one known equivalent technique for another may be obvious even if the prior art does not expressly suggest the substitution.” See page 3 of the Aug. 18, 2003 Office Action (emphasis in original). Appellants respectfully submit that the modifications proposed by the Examiner in the present case do not entail the mere substitution of one technique for another, let alone of a known equivalent technique. Rather, the Examiner’s proposal would entail substitution of (1) the chemicals involved, (2) the (non-equivalent) methods involved, (3) the purpose to be achieved, as well as (4) the products which would be obtained. For example, *Tate* and *Nishida* use different chemicals (polyethylene particles as opposed to silica alumina catalyst particles and a liquid curing agent as opposed to feed stock, such as a heavy oil) in different methods (coating and penetration of the curing agent into the polyethylene particles

as opposed to vaporization of the feed stock during an extremely short contact period with the catalyst; 50°C as opposed to 450-700°C) for different purposes (to effect diffusion and penetration of the curing agent into the polyethylene pellets as opposed to cracking the feed stock) to obtain different products (curable polyethylene pellets as opposed to gasoline or light olefins). Accordingly, the Examiner's assertion is inapposite in the present case.

b. *Nishida* Teaches Away from The Examiner's Proposed Combination, Dictating Dismissal of the Examiner's Rejection and Allowance of Claims 34-38, 40-42, 47, and 48.

If *Nishida* is deemed to be analogous art, then *Nishida*, when properly considered as a whole, teaches away from the proposed combination with *Tate*. A reference must be considered in its entirety, including portions that would lead away from the claimed invention. See M.P.E.P. § 2141.02.

In the present case, *Tate* discloses "a method for preparing curable pellets of polyethylene and copolymers thereof...by mixing polyethylene pellets with a liquid curing agent at a temperature **below** the decomposition temperature of the curing agent and **below** the softening point of polyethylene and copolymers thereof." See Abstract (emphasis added). *Tate* repeatedly emphasizes the advantages of such an operating temperature. For example, at column 2, lines 38-49, *Tate* discloses that "temperatures below the thermal decomposition temperature of the curing agent increases the output of pellets from the plasticizing mixer by a factor of two to three," and that "by producing curable polyethylene pellets in which the curing agent has not

been exposed to temperatures above the thermal decomposition temperature thereof both the extrusion rate and the quality of products extruded therefrom are enhanced.” *Tate* also warns that “when the requisite mixing time is shortened only by raising the working temperature the working temperature must not be so high that the curing agent penetrates and diffuses into the pellets before it is uniformly dispersed throughout the pellets which can cause lack of uniformity in the concentration of curing agent penetrating into individual pellets” and that “if the working temperature is set near the softening point of polyethylene the pellets tend to cohere into lumps before or during agitation.” See col. 4, lines 17-26. In *Tate*’s description of the preferred embodiment, *Tate* discloses that the curing agent is sprayed through the pellet mass after the pellet temperature has been stabilized at 50 °C. See col. 3, lines 22-25.

In stark contrast, *Nishida* is drawn to “an apparatus for mixing a fluid feed stock, such as a heavy oil, and particles of a catalyst for **gasifying** the heavy oil.” See Abstract and col. 1, lines 7-9 (emphasis added). It is well known that, in catalytic cracking processes, the heat from the catalyst **vaporizes** the feed stock and brings it up to the desired reaction temperature. See e.g., col. 4, lines 1-2; col. 12, lines 8-14 (emphasis added). “[A] rapid mixture of feed stock and a catalyst and vaporization thereof... is indispensable.” See col. 1, lines 39-42. Accordingly, *Nishida* repeatedly teaches that the catalyst particles are heated to a temperature of 450-700°C. See e.g., col. 4, line 32; col. 6, lines 6 and 7; col. 7, lines 1 and 24; col. 12, line 7; Experiment 1 at col. 13, line 12; and Experiment 3 at col. 15, line 37.

As *Nishida*'s process requires temperatures high enough to vaporize liquid feed stock, such as between 450-700 °C, whereas *Tate*'s process requires temperatures below the decomposition temperature of the curing agent and below the softening point of polyethylene and copolymers thereof, such as 50 °C, the references **teach away** from the combination proposed by the Examiner. For at least this reason, the teachings of *Nishida* and *Tate* cannot be combined in the manner proposed by the Examiner. See M.P.E.P. § 2145 (D).

c. The Examiner's Use of Hindsight Reasoning Dictates Dismissal of the Examiner's Rejection and Allowance of Claims 34-38, 40-42, 47, and 48.

It appears as though the Examiner's rejection presents a classic example of hindsight reasoning, because she did not solely use facts gleaned from the prior art. Even though expressly proscribed, such hindsight is understandable, particularly given the difficulties in the examination process. Indeed, the M.P.E.P. notes: "The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." M.P.E.P. § 2142 (emphasis added).

Appellants' disclosure is, of course, irrelevant in discerning a motivation to modify the prior art. *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617 (Fed. Cir. 1999). In *Dembiczak*, the Federal Circuit specifically admonished that taking "the inventor's disclosure as a blueprint" is "the essence of hindsight." *Id.* The Court has

further warned that an “inventor’s explanation of how the invention works does not render obvious that which is otherwise unobvious.” *In re Glaug*, 283 F.3d 1335, 1342, 62 U.S.P.Q.2d 1151, 1155 (Fed. Cir. 2002). These admonitions and warnings are “especially important in the case of less technically complex inventions, where the very ease with which the invention can be understood may prompt one to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617 (quotation omitted).

Yet, Appellants submit that only in hindsight could one with the cited references before him/her combine their teachings in the claimed manner with a reasonable expectation of success. Examiners, however, may not pick and choose among isolated disclosures in references to defeat patentability of a claimed invention. Such picking and choosing amounts to improper hindsight reconstruction, and is prohibited. *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q. 2d 1596, 1600 (Fed. Cir. 1988).

In the present case, the Examiner admits that *Tate* fails to teach any of the presently claimed steps in independent claim 34. See page 3 of the April 25, 2003 Office Action (recognizing that *Tate* fails to teach steps a), b), c), and d)). To remedy the primary reference’s failure to teach anything in independent claim 34 of the present application, the Examiner relies on *Nishida* for the alleged teaching of steps a), b), and c), and *Hiorth* for the alleged teaching of step d). However, as discussed above, *Tate* and *Nishida* involve the use of different chemicals in different

methods for different purposes to obtain different products. One of ordinary skill in the art would not have been motivated to combine their teachings nor had a reasonable expectation of success in doing so. Similarly, *Tate* and *Hiorth* involve the use of different chemicals in different methods for different purposes to obtain different products. However, as discussed below, *Hiorth* does not even contemplate drying its product - the step for which the Examiner relies on this reference.

Accordingly, Appellants submit that the Examiner is impermissibly using hindsight to piece together portions of very dissimilar references, notably not including any portion of the primary reference.

Accordingly, for at least this additional reason, Appellants respectfully request reversal of this rejection.

3. The Rejection Should be Reversed Because There is No Evidence of a Reasonable Expectation of Success that Would Prompt a Person of Ordinary Skill in the Art to Combine *Tate*, *Nishida*, and *Hiorth*.

With respect to the second criterion the Examiner must demonstrate to establish a prima facie case of obviousness, *i.e.*, that there is a reasonable expectation of success in the proposed combination, the Examiner has failed to meet the requisite burden.

As discussed above, *Tate* teaches a method for preparing curable pellets of polyethylene and copolymers thereof by mixing polyethylene pellets at 50 °C with a curing agent which coats and then penetrates the pellets. *Nishida* teaches an apparatus for mixing a fluid feed stock and a heated silica alumina catalyst for

vaporizing the heavy oil wherein contact between the feed stock and the catalyst is only for an extremely short period of time. Accordingly, these references use **different chemicals** (polyethylene particles substituted for silica alumina catalyst particles and a liquid curing agent substituted for feed stock, such as a heavy oil) in **different methods** (coating and penetration of the curing agent into the polyethylene particles as opposed to vaporization of the feed stock during an extremely short contact period with the catalyst; 50°C as opposed to 450-700°C) for **different purposes** (to combine the curing agent and polyethylene pellet as opposed to cracking the feed stock) for **different products** (curable polyethylene pellets as opposed to gasoline or light olefins).

Based on the teachings of *Tate* and *Nishida*, one of ordinary skill in the art would expect that applying the process of *Nishida* to the polyethylene pellets and curing agent of *Tate* to be a **failure**. See, e.g., *Tate* at col. 2, lines 38-49, col. 4, lines 17-26. Accordingly, one of ordinary skill in the art would not have had a reasonable expectation of success in the use of the very different chemicals in a very different way for a different purpose to obtain very different products as proposed by the Examiner.

In response, the Examiner has asserted "there is reasonable expectation of success in applying *Nishida* et al. to *Tate* et al. because both processes are directed to mixing heated particles of the same size with a liquid coating." See page 3 of the Aug. 18, 2003 Office Action (emphasis in original).

As an initial matter, Appellants note that *Nishida* is not concerned with a liquid “coating.” Rather, the feed stock therein is refined and gasified by contact with the catalyst. See e.g., col. 1, line 63 and col. 7, lines 40-43. Further, Appellants reminded the Examiner that, even apart from the asserted similarities, the cited references use different chemicals in different methods for different purposes to obtain different products.

The Examiner’s proposed modifications would result in (1) a significant reduction of the contact time between the coating substance and the particles pursuant to *Nishida* (see e.g., col. 7, lines 49-55 of *Nishida* reciting 0.1 to 1.5 seconds; see also col. 3, lines 26-30 of *Tate* reciting about four to about nine hours), and (2) a complete lack of guidance regarding the required processing temperature. Appellants submit that the combination of these effects would have left one of ordinary skill in the art without a reasonable expectation of success.

Specifically, at least because the Examiner’s proposal eliminates *Tate*’s step of diffusion and penetration and reduces contact time between the substance and the particle, one of ordinary skill in the art would not have reasonably expected the Examiner’s proposed process to result in the claimed “substantially complete absorption,” particularly, in the absence of high temperatures. However, as discussed above, *Tate* teaches away from the use of high temperatures.

With respect to the processing temperature, the Examiner asserts that “one of ordinary skill in the art would not use process parameters for mixing catalyst particles with heavy oil for mixing and coating plastic particles with a curing agent”

and that “the selection of reaction parameters such as temperature and concentration would have been obvious.” See pages 3 and 4 of the Aug. 18, 2003 Office Action. These assertions, however, are completely without basis. Moreover, the assertion that the selection of temperature would have been obvious is contrary to the teachings of *Tate*. For example, *Tate* discloses four previously known methods for processing curable pellets of polyethylene and copolymers of polyethylene for use in extrusion coating processes. See col. 1, lines 21-50. Each of these four processes comprised the use of different temperatures for different steps, including temperatures above the melting point of the polyethylene. In contrast, *Tate* requires temperatures not only below the melting point of the polyethylene, but below its softening point. See e.g., col. 2, lines 3-4. The *Tate* process, however, is also supplemented by the step of softening the pellets by agitation using turbulent air as discussed above.

Accordingly, Appellants respectfully submit that the selection of the reaction parameters would not only have been nonobvious, but would have left one of ordinary skill in the art with a reasonable expectation of **failure** in the proposed modifications.

4. The Rejection Should be Reversed Because The Prior Art Does Not Teach or Suggest The Final Limitation of Claim 34 And There is No Evidence That the Missing Limitation is Within the Knowledge of One of Ordinary Skill in the Art.

The Examiner admits that *Tate* and *Nishida* fail to teach introducing a substance in liquid phase into plastic granules using a method comprising, *inter alia*,

step d) of independent claim 34, specifically, submitting the mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules. See April 25, 2003 Office Action at page 5. The Examiner therefore relies on *Hiorth* to cure this additional deficiency. *Id.*

Appellants submit that the Examiner's reasoning is both flawed and lacks any support in the objective evidence of record. First, the cited portion of *Hiorth*, namely column 4, lines 42-44, actually recites "[t]he mixed product is then, entrained in the air stream, discharged through an exit 35 **in the lower part of the mixing chamber.**" See col. 4, lines 42-44 (emphasis added). Accordingly, and as corroborated by Figure 1, the exit 35 is itself within the mixing chamber.¹ Second, *Hiorth* also contradicts the Examiner's assertion that "the mixed powder is...in a final dry condition." For example, *Hiorth* states that "[t]he resultant spray [in the O zone] which **after mixing** may have a **very sticky or adhesive consistency**, may now immediately be passed into a post-mixing and screw-conveyor system bale to handle plastic material." See col. 6, lines 54-58. Accordingly, *Hiorth* not only fails to teach drying the mixture in a drying chamber, but does not even contemplate it as an option.

Accordingly, for at least the foregoing reason, Appellants submit that the cited references, when combined as proposed by the Examiner, **fail** to teach or suggest

all of the limitations of at least independent claim 34. For at least this additional reason, Appellants respectfully request withdrawal of this rejection and allowance of claims 34-38, 40-42, 47, and 48.

IX. Conclusion

For the reasons given above, pending claims 34-38, 40-42, 47, and 48 are patentable over the cited prior art. The Board of Patent Appeals and Interferences should therefore reverse or dismiss the outstanding rejection and allow claims 34-48.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.


¹ Nevertheless, Appellants note that claim 34 does not require step (d) to be conducted in a separate chamber from step (c)

Appeal Brief for
Application No.: 09/892,480
Attorney Docket No. 5788.0170-00

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW,
GARRETT & DUNNER, L.L.P.

Dated: February 5, 2004

By: 
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Appendix to Appeal Brief Filed February 5, 2004

Rejected claims 34-38, 40-42, 47, and 48:

34. Method for continuously introducing a substance in liquid phase into plastics granules comprising the steps of:

a) feeding a substantially continuous flow of said plastics granules to at least one substantially static spraying chamber,

b) spraying said substance in liquid phase onto the plastics granules continuously flowing within said spraying chamber,

c) passing the granules partially or totally coated by said substance in liquid phase continuously leaving the spraying chamber through substantially static mixing means supported in at least one mixing chamber provided downstream of said spraying chamber, so as to submit said granules to mixing.

d) submitting the mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules.

35. Method according to claim 34, wherein said drying step is carried out in a drying chamber provided downstream of said mixing zone.

36. Method according to claim 35, wherein the plastics granules flow by gravity in a substantially continuous manner through said spraying, mixing and drying chambers.

37. Method according to claim 34, wherein said spraying step of the substance in liquid phase is carried out by means of a plurality of injectors supported within said spraying chamber.

38. Method according to claim 37, wherein said spraying step is carried out by nebulizing said substance in liquid phase in a plurality of droplets having a mean diameter comprised between 10 and 500 μm .

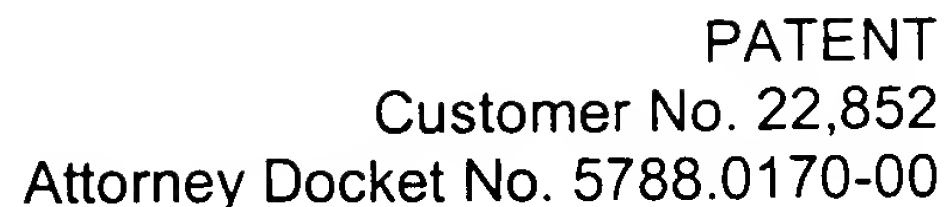
40. Method according to claims 34 or 37, further comprising the step of splitting the continuous flow of plastics granules in a plurality of streams continuously flowing in respective flowpaths defined within the spraying chamber facing each of said injectors.

41. Method according to claim 34, wherein said steps a) - d) are carried out at a temperature comprising the temperature between the melting temperature of the substance in liquid phase and the minimum temperature between the softening temperature of the polymer to be impregnated and the temperature at which the substance in liquid phase starts to thermally deteriorate.

42. Method according to claim 34 wherein said spraying b) and mixing c) steps are carried out in a total time comprising between 10 and 40 minutes and that said drying step d) is carried out in a time comprising between 30 and 90 minutes.

47. Method according to claim 34, wherein the granules are made of a plastics, wherein said plastics are polyethylene, ethylene-propylene copolymers, ethylene-propylene-diene terpolymers, ethylene-vinyl acetate (EVA) copolymers, or acrylic polyesters, wherein said acrylic polyesters are ethylene-methyl acrylate, ethylene-ethyl acrylate, ethylene-butyl acrylate groups, and mixture thereof.

48. Method according to claim 34, wherein said substance in liquid phase is a cross-linking agent, cross-linking co-agent, thermal stabilizer, light stabilizer, voltage stabilizer, UV stabilizer, processing aid, lubricant, flame retardant, plasticizer, nucleating agent, additive for water-treeing resistance, and mixtures thereof.



In re Application of:

Giuseppe COLOMBO et al.

Application No.: 09/892,480

Filed: June 28, 2001.

For: METHOD AND APPARATUS FOR
INTRODUCING IN CONTINUOUS A
SUBSTANCE IN LIQUID PHASE
INTO PLASTICS GRANULES

Mail Stop Appeal Brief--Patents

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

In support of the Notice of Appeal filed December 17, 2003, Appellants present this Appeal Brief in triplicate complying with 37 C.F.R. § 1.192 and enclose a check for \$330.00 covering the fee under 37 C.F.R. § 1.17(c). This Appeal Brief is timely, because it is filed within two months of the Notice of Appeal.

This appeal responds to the August 18, 2003, final rejection of claims 34-38, 40-42, 47, and 48.

If any additional fees are required or if the enclosed payment is insufficient, Appellants request that the required fees be charged to Deposit Account No. 06-0916.

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I. Real Party In Interest

Pirelli Cavi E Sistemi S.p.A. is the assignee of record for the entire right, title, and interest in the application.

II. Related Appeals and Interferences

There are currently no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. Status Of Claims

Claims 34-66 are pending in this application; however, claims 49-66 have been withdrawn from consideration by the Office in view of the January 29, 2002, Restriction Requirement. The Office has indicated that claims 39 and 43-46 would be allowable if rewritten in independent form including all the limitations of the base and intervening claims

Claims 34-38, 40-42, 47, and 48 have been finally rejected by the Examiner and Appellants appeal the rejection of those claims. The attached Appendix contains a clean copy of the claims involved in the appeal, *i.e.*, claims 34-38, 40-42, 47, and 48.

IV. Status Of Amendments

All amendments have been entered. No amendments under 37 C.F.R. § 1.116 have been filed.

V. Summary Of Invention

During the processing of plastic, it has been common practice to incorporate therein suitable substances in liquid phase so as to provide the finished product with desired properties. Specification at page 1, lines 13-19. Appellants have identified the need to develop insulating materials with given levels of homogeneity and isotropy. To achieve this end and similar ends, Appellants discovered a method and an apparatus for the continuous introduction of a substance in liquid phase into plastic granules. Specifically, the method comprises:

- a) feeding a substantially continuous flow of plastics granules to at least one substantially static spraying chamber;
- b) spraying a substance in liquid phase onto the plastics granules, which are continuously flowing within the at least one spraying chamber;
- c) passing the granules, which are partially or totally coated by the substance in liquid phase and are continuously leaving the spraying chamber, through a substantially static mixing means supported in at least one mixing chamber. The at least one mixing chamber is located downstream of the spraying chamber. The substantially static mixing means reduces the abrasive action on the granules to a minimum while the partially or totally coated granules are mixed; and
- d) submitting the resultant mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules. Specification at page 5, lines 4-22.

"Substantially static mixing means" has been defined to mean a mixing device without moving mechanical elements that can generate substantial amounts of plastic dust from the plastic granules. Specification at 5, lines 23-27. This way the granules are coated without introducing additional energy that may generate abrasive action. *Id* at page 5, line 27 through page 6, line 4.

The claimed process was discovered to be capable of resolving one or more problems in the prior art: protecting the physical integrity of the plastic granules (in particular the avoidance of generating plastic dust), allowing operation with thermally unstable or poorly heat-resistant plastic granules, and/or allowing operation with thermally unstable or poorly heat-resistant substances in liquid phase. *Compare* specification at page 4, line 30 to page 5, line 3 *with id.* at page 3, line 3 to page 4, line 28.

Pending claims 34-48 relate to a method for the continuous introduction of a substance in liquid phase into plastic granules. Claims 49-66 relate to an apparatus for the continuous introduction of a substance in liquid phase into plastic granules.

VI. Issues

The sole issue on appeal is whether claims 34-38, 40-42, 47, and 48 are patentable under 35 U.S.C. § 103(a) over *Tate* (U.S. Patent No. 4,035,322) in view of *Nishida* (U.S. Patent No. 6,186,658) and further in view of *Hiorth* (U.S. Patent No. 4,191,480).

VII. Grouping Of Claims

Each claim of this patent application is separately patentable, and upon issuance of a patent will be entitled to a separate presumption of validity under 35 U.S.C. § 282. For convenience in handling this Appeal, however, pending claims 34-38, 40-42, 47, and 48, stand or fall together.

VIII. Argument

A. The Rejection of Claims 34-38, 40-42, 47, and 48 Under 35 U.S.C. § 103(a) over *Tate* in view of *Nishida* and further in view of *Hiorth* Should be Reversed Because *Nishida* is Nonanalogous Art.

The only pending rejection of the claims is an obviousness rejection based in part on the teachings of *Nishida*. In order to rely upon a reference under Section 103, the reference must be analogous prior art. M.P.E.P. § 2141.01(a). In determining whether a reference is analogous prior art, the Federal Circuit has espoused a two prong test inquiring:

(1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved.

In re Clay, 966 F.2d 656, 658-59, 23 U.S.P.Q.2d 1058, 1060-61 (Fed. Cir. 1992)

As discussed above, Appellants' rejected claims are directed to a method for the continuous introduction of a substance in liquid phase into plastic granules. This method comprises, *inter alia*, spraying plastic granules with a substance in liquid

form, mixing the sprayed granules, and then drying the resultant product to allow a substantially complete absorption of the substance in liquid phase by the granules.

Nishida is from a separate field of endeavor -- catalytic cracking processes. In stark contrast to the claims at issue, *Nishida* is drawn to "an apparatus for mixing a fluid feed stock, such as a heavy oil, and particles of a catalyst for **gasifying** the heavy oil." See Abstract and col. 1, lines 7-9 (emphasis added). In such catalytic cracking processes, the heat from the catalyst **vaporizes** the feed stock and brings it up to the desired reaction temperature. See e.g., col. 4, lines 1-2; col. 12, lines 8-14 (emphasis added). "[A] rapid mixture of feed stock and a catalyst and vaporization thereof... is indispensable." See col. 1, lines 39-42. *Nishida* repeatedly teaches that the catalyst particles are heated to a temperature of 450-700 °C. See e.g., col. 4, line 32; col. 6, lines 6 and 7; col. 7, lines 1 and 24; col. 12, line 7; Experiment 1 at col. 13, line 12; and Experiment 3 at col. 15, line 37.

In other words, the process of *Nishida* is not directed to a method for coating a plastic particle such that the coating material is absorbed into the particle or any subpart of that method. *Nishida* describes a process that would likely destroy the particles and/or substance in liquid phase recited by the claims. Therefore, a person of ordinary skill in the art would never consider *Nishida* to be reasonably pertinent to the claimed process.

For this reason alone, the rejection of claims 34-38, 40-42, 47, and 48 should be reversed and the claims allowed.

B. The Rejection of Claims 34-38, 40-42, 47, and 48 Under 35 U.S.C. § 103(a) over *Tate* in view of *Nishida* and further in view of *Hiorth* Should be Reversed Because the Examiner has Failed to Establish a Case of *Prima Facie* Obviousness.

The Examiner rejects 34-38, 40-42, 47, and 48 as unpatentable under 35 U.S.C. § 103(a) over *Tate* in view of *Nishida* and further in view of *Hiorth*.

Appellants respectfully submit that this rejection is improper because the Examiner has not provided the necessary evidence to establish a case of *prima facie* obviousness. Neither *Tate*, *Nishida*, nor *Hiorth*, alone or in combination, renders obvious the recited method.

1. The Rejection Should be Reversed Because the Examiner has Not Set Forth The Three Basic Criteria for a *Prima Facie* Case of Obviousness.

The Federal Circuit has noted “the examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability.” *In re Oetiker*, 977 F.2d 1443, 1445, 24 U.S.P.Q.2d 1443, 1444 (Fed. Cir. 1992). If the Examiner fails to proffer “a *prima facie* case of unpatentability, then without more the applicant is entitled to grant of the patent.” *Id.* Using principles of obviousness discerned from case law, the Office sets forth the requirements for a *prima facie* case of obviousness:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior

art reference (or references when combined) must teach
or suggest all the claim limitations.

M.P.E.P. § 2142 (emphasis added).

To meet this burden, the Examiner must cite facts in support of each requirement for a Section 103 rejection and not merely recite the Examiner's opinion. The Federal Circuit has explained that "[w]ith respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or expertise . . . Rather, the Board must point to some concrete evidence in the record in support of these findings." *In re Zurko*, 258 F.3d 1379, 1385, 59 U.S.P.Q.2d 1693, 1697 (Fed. Cir. 2001) (emphasis added).

In this case, the Examiner fails to present substantial evidence on all three prongs. First, there is no evidence, except Appellants' specification, of a suggestion or motivation that would prompt a person of ordinary skill in the art to combine *Tate*, *Nishida*, and *Hiorth*. Second, there is no evidence of a reasonable expectation of success that would prompt a person of ordinary skill in the art to combine *Tate*, *Nishida*, and *Hiorth*. Third, neither the proposed combination of *Tate*, *Nishida*, and *Hiorth*, nor the "evidence" of the knowledge of one skilled in the art teaches or suggests all of the claim limitations.

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**2. The Rejection Should be Reversed Because
Neither the Prior Art nor the Knowledge Generally
Available to One of Ordinary Skill in the Art
Provides the Requisite Suggestion or Motivation to
Combine *Tate*, *Nishida*, and *Hiorth*.**

The Federal Circuit has recognized that “the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” *In re Dembiczak*, 175 F.3d 994, 999, 50 U.S.P.Q.2d 1614, 1617 (Fed. Cir. 1999), *abrogated on other grounds by In re Gartside*, 203 F.3d 1305, 53 U.S.P.Q.2d 1769 (Fed. Cir. 2000).

The Court has further noted that the Examiner’s burden to establish a motivation to combine or modify may be satisfied by one of only three sources. First and most importantly, an objective teaching to combine the references may be found in the prior art. Second, the nature of the problem may provide the suggestion to combine the references. And third, general knowledge of one of ordinary skill in the art may supply the motivation to the combine the prior art references. *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617; *In re Fine*, 837 F.2d 1071, 1074, 5 U.S.P.Q.2d 1596, 1598-99 (Fed. Cir. 1998); *In re Geiger*, 815 F.2d 686, 688, 2 U.S.P.Q.2d 1276, 1278 (Fed. Cir. 1987); *In re Rouffet*, 149 F.3d 1350, 1355, 47 U.S.P.Q.2d 1453, 1456 (Fed. Cir. 1998). Irrespective of the source, however, the Examiner’s factual findings regarding the motivation to combine or modify must be “clear and particular.” *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617. The Examiner fails to set forth such “clear and particular” evidence here.

a. **The Examiner's Failure to Present Evidence of Motivation Dictates Dismissal of the Examiner's Rejection and Allowance of Claims 34-38, 40-42, 47, and 48.**

The Examiner admits that *Tate* fails to teach introducing a substance in liquid phase into plastic granules using a method comprising, *inter alia*, (1) step a) of independent claim 34, (2) step b) of independent claim 34, and (3) step c) of independent claim 34. See April 25, 2003 Office Action at page 3. The Examiner relies on *Nishida* to cure these deficiencies. *Id.* However, the Examiner has failed to make a factual inquiry based on the objective evidence of record. Such an inquiry reveals that there is no motivation to make the proposed modifications at the time the invention was made, and in fact, that the cited references teach away from the proposed combination for at least the following reasons.

First, *Tate*'s method is drawn to **preparing curable pellets** of polyethylene and copolymers thereof (see *Tate* at abstract), whereas *Nishida* is drawn to **catalytic cracking of liquid feed stock at high temperatures** to produce gasoline or light olefins. See *Nishida* at abstract. Second, *Tate*'s method involves coating **pellets of polyethylene** and/or copolymers with a liquid curing agent, whereas, in *Nishida*'s method, the heat from the **silica alumina catalyst** vaporizes the feed stock (see *e.g.*, *Nishida* at col. 4, lines 1-2; col. 12, lines 8-14) and the oil vapors thus produced are later **separated from the catalyst** and the catalyst is recycled for further use (see *e.g.*, *id.* at col. 7, lines 31-35). Third, in *Tate*'s method, the liquid curing agents **penetrate and diffuse into the pellets**, whereas *Nishida* discloses

that "the contact reaction [with the **silica alumina catalyst**] can be conducted uniformly for **an extremely short period of time**... (approximately 0.1 to 1.5 seconds)." See *id.* at col. 7, lines 49-55.

As *Tate* and *Nishida* involve the use of **different chemicals** in **different methods** for **different purposes** to obtain **different products**, one of ordinary skill in the art would not have been motivated to combine their teachings as proposed by the Examiner. Accordingly, for at least this reason, Appellants submit that the Examiner has failed to demonstrate a *prima facie* case of obviousness.

In response, the Examiner argues without analysis that "there is motivation to combine *Tate* et al. and *Nishida* et al. since in contrast to *Tate* et al., a process of *Nishida* et al. provides rapid and uniform mixing [of] particles of the same size with a liquid coating." See page 3 of the Aug. 18, 2003 Office Action (emphasis in original). This statement, however, indicates that the Examiner, while acknowledging at least one of the critical differences between the processes disclosed in *Tate* and *Nishida*, has failed to appreciate the effect such a difference would have on *Tate*, as viewed by one of ordinary skill in the art.

Nishida provides "an apparatus for mixing a fluid of a feed stock, such as a heavy oil, and particles of a catalyst for gasifying the fluid in a reactor." See e.g., col. 1, lines 61-63. Regarding *Nishida*'s rapid and uniform mixing, *i.e.*, the Examiner's sole asserted source of motivation for the proposed modification, *Nishida* teaches that "the feed stock can be mixed rapidly and uniformly with the particles **because the feed stock is further refined by impact upon contact with the**

annularly flowing particles.” See col. 7, lines 40-43 (emphasis added). In *Nishida*, the feed stock is formed into oil vapors (*i.e.*, not absorbed) and later separated from the catalyst, which is recycled for further use. See *e.g.*, col. 7, lines 31-35.

This process of *Nishida* stands in stark contrast to *Tate*. See *e.g.*, col. 3, lines 47-49 (reciting that “the curing agent penetrates and diffuses into the pellets”).

Nishida is **not** concerned with penetration and diffusion of a liquid into the particles. In fact, as discussed above, *Nishida*’s method is tailored to achieve exactly the opposite and, for at least this reason, *Nishida*’s teaching of “rapid and uniform mixing” cannot be a motivation to modify *Tate*; rather it is a motivation NOT to make the modifications proposed by the Examiner.

In addition, the Examiner asserts that “the substitution of one known equivalent technique for another may be obvious even if the prior art does not expressly suggest the substitution.” See page 3 of the Aug. 18, 2003 Office Action (emphasis in original). Appellants respectfully submit that the modifications proposed by the Examiner in the present case do not entail the mere substitution of one technique for another, let alone of a known equivalent technique. Rather, the Examiner’s proposal would entail substitution of (1) the chemicals involved, (2) the (non-equivalent) methods involved, (3) the purpose to be achieved, as well as (4) the products which would be obtained. For example, *Tate* and *Nishida* use different chemicals (polyethylene particles as opposed to silica alumina catalyst particles and a liquid curing agent as opposed to feed stock, such as a heavy oil) in different methods (coating and penetration of the curing agent into the polyethylene particles

as opposed to vaporization of the feed stock during an extremely short contact period with the catalyst; 50°C as opposed to 450-700°C) for different purposes (to effect diffusion and penetration of the curing agent into the polyethylene pellets as opposed to cracking the feed stock) to obtain different products (curable polyethylene pellets as opposed to gasoline or light olefins). Accordingly, the Examiner's assertion is inapposite in the present case.

b. *Nishida* Teaches Away from The Examiner's Proposed Combination, Dictating Dismissal of the Examiner's Rejection and Allowance of Claims 34-38, 40-42, 47, and 48.

If *Nishida* is deemed to be analogous art, then *Nishida*, when properly considered as a whole, teaches away from the proposed combination with *Tate*. A reference must be considered in its entirety, including portions that would lead away from the claimed invention. See M.P.E.P. § 2141.02.

In the present case, *Tate* discloses "a method for preparing curable pellets of polyethylene and copolymers thereof...by mixing polyethylene pellets with a liquid curing agent at a temperature **below** the decomposition temperature of the curing agent and **below** the softening point of polyethylene and copolymers thereof." See Abstract (emphasis added). *Tate* repeatedly emphasizes the advantages of such an operating temperature. For example, at column 2, lines 38-49, *Tate* discloses that "temperatures below the thermal decomposition temperature of the curing agent increases the output of pellets from the plasticizing mixer by a factor of two to three," and that "by producing curable polyethylene pellets in which the curing agent has not

been exposed to temperatures above the thermal decomposition temperature thereof both the extrusion rate and the quality of products extruded therefrom are enhanced.” *Tate* also warns that “when the requisite mixing time is shortened only by raising the working temperature the working temperature must not be so high that the curing agent penetrates and diffuses into the pellets before it is uniformly dispersed throughout the pellets which can cause lack of uniformity in the concentration of curing agent penetrating into individual pellets” and that “if the working temperature is set near the softening point of polyethylene the pellets tend to cohere into lumps before or during agitation.” See col. 4, lines 17-26. In *Tate*’s description of the preferred embodiment, *Tate* discloses that the curing agent is sprayed through the pellet mass after the pellet temperature has been stabilized at 50 °C. See col. 3, lines 22-25.

In stark contrast, *Nishida* is drawn to “an apparatus for mixing a fluid feed stock, such as a heavy oil, and particles of a catalyst for **gasifying** the heavy oil.” See Abstract and col. 1, lines 7-9 (emphasis added). It is well known that, in catalytic cracking processes, the heat from the catalyst **vaporizes** the feed stock and brings it up to the desired reaction temperature. See e.g., col. 4, lines 1-2; col. 12, lines 8-14 (emphasis added). “[A] rapid mixture of feed stock and a catalyst and vaporization thereof... is indispensable.” See col. 1, lines 39-42. Accordingly, *Nishida* repeatedly teaches that the catalyst particles are heated to a temperature of 450-700°C. See e.g., col. 4, line 32; col. 6, lines 6 and 7; col. 7, lines 1 and 24; col. 12, line 7; Experiment 1 at col. 13, line 12; and Experiment 3 at col. 15, line 37.

As *Nishida*'s process requires temperatures high enough to vaporize liquid feed stock, such as between 450-700 °C, whereas *Tate*'s process requires temperatures below the decomposition temperature of the curing agent and below the softening point of polyethylene and copolymers thereof, such as 50 °C, the references **teach away** from the combination proposed by the Examiner. For at least this reason, the teachings of *Nishida* and *Tate* cannot be combined in the manner proposed by the Examiner. See M.P.E.P. § 2145 (D).

c. The Examiner's Use of Hindsight Reasoning Dictates Dismissal of the Examiner's Rejection and Allowance of Claims 34-38, 40-42, 47, and 48.

It appears as though the Examiner's rejection presents a classic example of hindsight reasoning, because she did not solely use facts gleaned from the prior art. Even though expressly proscribed, such hindsight is understandable, particularly given the difficulties in the examination process. Indeed, the M.P.E.P. notes: "The tendency to resort to 'hindsight' based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art." M.P.E.P. § 2142 (emphasis added).

Appellants' disclosure is, of course, irrelevant in discerning a motivation to modify the prior art. *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617 (Fed. Cir. 1999). In *Dembiczak*, the Federal Circuit specifically admonished that taking "the inventor's disclosure as a blueprint" is "the essence of hindsight." *Id.* The Court has

further warned that an “inventor’s explanation of how the invention works does not render obvious that which is otherwise unobvious.” *In re Glaug*, 283 F.3d 1335, 1342, 62 U.S.P.Q.2d 1151, 1155 (Fed. Cir. 2002). These admonitions and warnings are “especially important in the case of less technically complex inventions, where the very ease with which the invention can be understood may prompt one to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher.” *Dembiczak*, 175 F.3d at 999, 50 U.S.P.Q.2d at 1617 (quotation omitted).

Yet, Appellants submit that only in hindsight could one with the cited references before him/her combine their teachings in the claimed manner with a reasonable expectation of success. Examiners, however, may not pick and choose among isolated disclosures in references to defeat patentability of a claimed invention. Such picking and choosing amounts to improper hindsight reconstruction, and is prohibited. *In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q. 2d 1596, 1600 (Fed. Cir. 1988).

In the present case, the Examiner admits that *Tate* fails to teach any of the presently claimed steps in independent claim 34. See page 3 of the April 25, 2003 Office Action (recognizing that *Tate* fails to teach steps a), b), c), and d)). To remedy the primary reference’s failure to teach anything in independent claim 34 of the present application, the Examiner relies on *Nishida* for the alleged teaching of steps a), b), and c), and *Hiorth* for the alleged teaching of step d). However, as discussed above, *Tate* and *Nishida* involve the use of different chemicals in different

methods for different purposes to obtain different products. One of ordinary skill in the art would not have been motivated to combine their teachings nor had a reasonable expectation of success in doing so. Similarly, *Tate* and *Hiorth* involve the use of different chemicals in different methods for different purposes to obtain different products. However, as discussed below, *Hiorth* does not even contemplate drying its product - the step for which the Examiner relies on this reference.

Accordingly, Appellants submit that the Examiner is impermissibly using hindsight to piece together portions of very dissimilar references, notably not including any portion of the primary reference.

Accordingly, for at least this additional reason, Appellants respectfully request reversal of this rejection.

3. The Rejection Should be Reversed Because There is No Evidence of a Reasonable Expectation of Success that Would Prompt a Person of Ordinary Skill in the Art to Combine *Tate*, *Nishida*, and *Hiorth*.

With respect to the second criterion the Examiner must demonstrate to establish a prima facie case of obviousness, *i.e.*, that there is a reasonable expectation of success in the proposed combination, the Examiner has failed to meet the requisite burden.

As discussed above, *Tate* teaches a method for preparing curable pellets of polyethylene and copolymers thereof by mixing polyethylene pellets at 50 °C with a curing agent which coats and then penetrates the pellets. *Nishida* teaches an apparatus for mixing a fluid feed stock and a heated silica alumina catalyst for

vaporizing the heavy oil wherein contact between the feed stock and the catalyst is only for an extremely short period of time. Accordingly, these references use **different chemicals** (polyethylene particles substituted for silica alumina catalyst particles and a liquid curing agent substituted for feed stock, such as a heavy oil) in **different methods** (coating and penetration of the curing agent into the polyethylene particles as opposed to vaporization of the feed stock during an extremely short contact period with the catalyst; 50°C as opposed to 450-700°C) for **different purposes** (to combine the curing agent and polyethylene pellet as opposed to cracking the feed stock) for **different products** (curable polyethylene pellets as opposed to gasoline or light olefins).

Based on the teachings of *Tate* and *Nishida*, one of ordinary skill in the art would expect that applying the process of *Nishida* to the polyethylene pellets and curing agent of *Tate* to be a **failure**. See, e.g., *Tate* at col. 2, lines 38-49, col. 4, lines 17-26. Accordingly, one of ordinary skill in the art would not have had a reasonable expectation of success in the use of the very different chemicals in a very different way for a different purpose to obtain very different products as proposed by the Examiner.

In response, the Examiner has asserted "there is reasonable expectation of success in applying *Nishida* et al. to *Tate* et al. because both processes are directed to mixing heated particles of the same size with a liquid coating." See page 3 of the Aug. 18, 2003 Office Action (emphasis in original).

As an initial matter, Appellants note that *Nishida* is not concerned with a liquid “coating.” Rather, the feed stock therein is refined and gasified by contact with the catalyst. See e.g., col. 1, line 63 and col. 7, lines 40-43. Further, Appellants reminded the Examiner that, even apart from the asserted similarities, the cited references use different chemicals in different methods for different purposes to obtain different products.

The Examiner’s proposed modifications would result in (1) a significant reduction of the contact time between the coating substance and the particles pursuant to *Nishida* (see e.g., col. 7, lines 49-55 of *Nishida* reciting 0.1 to 1.5 seconds; see also col. 3, lines 26-30 of *Tate* reciting about four to about nine hours), and (2) a complete lack of guidance regarding the required processing temperature. Appellants submit that the combination of these effects would have left one of ordinary skill in the art without a reasonable expectation of success.

Specifically, at least because the Examiner’s proposal eliminates *Tate*’s step of diffusion and penetration and reduces contact time between the substance and the particle, one of ordinary skill in the art would not have reasonably expected the Examiner’s proposed process to result in the claimed “substantially complete absorption,” particularly, in the absence of high temperatures. However, as discussed above, *Tate* teaches away from the use of high temperatures.

With respect to the processing temperature, the Examiner asserts that “one of ordinary skill in the art would not use process parameters for mixing catalyst particles with heavy oil for mixing and coating plastic particles with a curing agent”

and that "the selection of reaction parameters such as temperature and concentration would have been obvious." See pages 3 and 4 of the Aug. 18, 2003 Office Action. These assertions, however, are completely without basis. Moreover, the assertion that the selection of temperature would have been obvious is contrary to the teachings of *Tate*. For example, *Tate* discloses four previously known methods for processing curable pellets of polyethylene and copolymers of polyethylene for use in extrusion coating processes. See col. 1, lines 21-50. Each of these four processes comprised the use of different temperatures for different steps, including temperatures above the melting point of the polyethylene. In contrast, *Tate* requires temperatures not only below the melting point of the polyethylene, but below its softening point. See e.g., col. 2, lines 3-4. The *Tate* process, however, is also supplemented by the step of softening the pellets by agitation using turbulent air as discussed above.

Accordingly, Appellants respectfully submit that the selection of the reaction parameters would not only have been nonobvious, but would have left one of ordinary skill in the art with a reasonable expectation of *failure* in the proposed modifications.

4. The Rejection Should be Reversed Because The Prior Art Does Not Teach or Suggest The Final Limitation of Claim 34 And There is No Evidence That the Missing Limitation is Within the Knowledge of One of Ordinary Skill in the Art.

The Examiner admits that *Tate* and *Nishida* fail to teach introducing a substance in liquid phase into plastic granules using a method comprising, *inter alia*,

step d) of independent claim 34, specifically, submitting the mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules. See April 25, 2003 Office Action at page 5. The Examiner therefore relies on *Hiorth* to cure this additional deficiency. *Id.*

Appellants submit that the Examiner's reasoning is both flawed and lacks any support in the objective evidence of record. First, the cited portion of *Hiorth*, namely column 4, lines 42-44, actually recites "[t]he mixed product is then, entrained in the air stream, discharged through an exit 35 **in the lower part of the mixing chamber.**" See col. 4, lines 42-44 (emphasis added). Accordingly, and as corroborated by Figure 1, the exit 35 is itself within the mixing chamber.¹ Second, *Hiorth* also contradicts the Examiner's assertion that "the mixed powder is...in a final dry condition." For example, *Hiorth* states that "[t]he resultant spray [in the O zone] which **after mixing** may have a **very sticky or adhesive consistency**, may now immediately be passed into a post-mixing and screw-conveyor system bale to handle plastic material." See col. 6, lines 54-58. Accordingly, *Hiorth* not only fails to teach drying the mixture in a drying chamber, but does not even contemplate it as an option.

Accordingly, for at least the foregoing reason, Appellants submit that the cited references, when combined as proposed by the Examiner, **fail** to teach or suggest

all of the limitations of at least independent claim 34. For at least this additional reason, Appellants respectfully request withdrawal of this rejection and allowance of claims 34-38, 40-42, 47, and 48.

IX. Conclusion

For the reasons given above, pending claims 34-38, 40-42, 47, and 48 are patentable over the cited prior art. The Board of Patent Appeals and Interferences should therefore reverse or dismiss the outstanding rejection and allow claims 34-48.

To the extent any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this Appeal Brief, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 06-0916.

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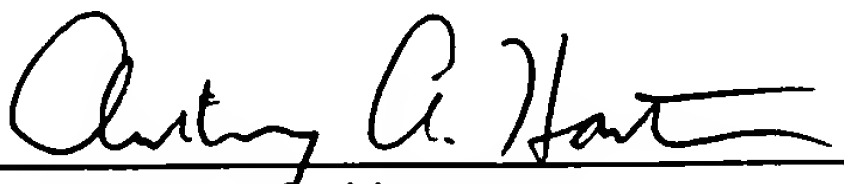
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¹ Nevertheless, Appellants note that claim 34 does not require step (d) to be conducted in a separate chamber from step (c)

Respectfully submitted,

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Appendix to Appeal Brief Filed February 5, 2004

Rejected claims 34-38, 40-42, 47, and 48:

34. Method for continuously introducing a substance in liquid phase into plastics granules comprising the steps of:

- a) feeding a substantially continuous flow of said plastics granules to at least one substantially static spraying chamber,
- b) spraying said substance in liquid phase onto the plastics granules continuously flowing within said spraying chamber,
- c) passing the granules partially or totally coated by said substance in liquid phase continuously leaving the spraying chamber through substantially static mixing means supported in at least one mixing chamber provided downstream of said spraying chamber, so as to submit said granules to mixing.
- d) submitting the mixed granules so obtained to drying for a time sufficient to allow a substantially complete absorption of the substance in liquid phase by the granules.

35. Method according to claim 34, wherein said drying step is carried out in a drying chamber provided downstream of said mixing zone.

36. Method according to claim 35, wherein the plastics granules flow by gravity in a substantially continuous manner through said spraying, mixing and drying chambers.

37. Method according to claim 34, wherein said spraying step of the substance in liquid phase is carried out by means of a plurality of injectors supported within said spraying chamber.

38. Method according to claim 37, wherein said spraying step is carried out by nebulizing said substance in liquid phase in a plurality of droplets having a mean diameter comprised between 10 and 500 μm .

40. Method according to claims 34 or 37, further comprising the step of splitting the continuous flow of plastics granules in a plurality of streams continuously flowing in respective flowpaths defined within the spraying chamber facing each of said injectors.

41. Method according to claim 34, wherein said steps a) - d) are carried out at a temperature comprising the temperature between the melting temperature of the substance in liquid phase and the minimum temperature between the softening temperature of the polymer to be impregnated and the temperature at which the substance in liquid phase starts to thermally deteriorate.

42. Method according to claim 34 wherein said spraying b) and mixing c) steps are carried out in a total time comprising between 10 and 40 minutes and that said drying step d) is carried out in a time comprising between 30 and 90 minutes.

47. Method according to claim 34, wherein the granules are made of a plastics, wherein said plastics are polyethylene, ethylene-propylene copolymers, ethylene-propylene-diene terpolymers, ethylene-vinyl acetate (EVA) copolymers, or acrylic polyesters, wherein said acrylic polyesters are ethylene-methyl acrylate, ethylene-ethyl acrylate, ethylene-butyl acrylate groups, and mixture thereof.

48. Method according to claim 34, wherein said substance in liquid phase is a cross-linking agent, cross-linking co-agent, thermal stabilizer, light stabilizer, voltage stabilizer, UV stabilizer, processing aid, lubricant, flame retardant, plasticizer, nucleating agent, additive for water-treeing resistance, and mixtures thereof.